

REMARKS

Claim 11 has been amended in accordance with page 6, line 17, and this claim prior to amendment has been re-presented as new claim 32.

Several new claims have been presented for consideration by the Examiner. New claim 22 finds basis in prior claims 1, 12 and 18, and the specification at page 6, line 15 et seq. and page 7, lines 1-3 and 13. The remaining new claims track claims 11-21.

It was pointed out during an interview that the chain length of the polyisobutylene amine is such as to make the reaction product compatible with a non-polar (non-aqueous) colorant dispersion environment, for example, an oil-based environment. The chain length is at least 50 carbons since shorter lengths are not suited for non-polar systems. Since there is no *in hoc verba* recitation of this chain length in the written description, alternate language was inserted into the claims. The newly submitted claims use alternate language to reference the chain length.

Claims 1 and 11-21 were rejected under 35 U.S.C. § 103 over Winter in combination with Patil. It is respectfully submitted that this rejection should be withdrawn and should not be applied to the newly submitted claims.

Claim 1 (and new claim 22) is directed to a dispersant which, in relatively small quantities, can cause a highly concentrated (40% or more), non-polar colorant dispersion to have a viscosity of less than about 150Pa.s and a relative interfacial

tension drop of less than about 1.5. This property is unpredictable and is surprising and unexpected.

Neither Winter nor Patil relate to a cyclic dispersant which could be used in a highly concentrated non-polar colorant dispersion. Thus, neither reference (alone or in combination) provides any basis for predicting whether or not a cyclic material would be a dispersant for highly concentrated non-polar colorant dispersions.

While Winter does disclose dispersions, there is not even the slightest hint that Winter's cyclic imide has any dispersant properties whatsoever. Further, Winter's dispersions are aqueous (col. 3, lines 17-25 and col. 4, line 15), and hence are polar. While the Office Action asserts on page 8 that Winter teaches his compound is used in dispersions of colorants at column 1, line 5, what that sentence actually states is that Winter's invention "is situate in the field of aqueous pigment preparations." To the extent that Winter does teach dispersants, they are nonionic surfactants such as polyphenol/fatty acid ethoxylates (see col. 7, lines 3-4). As the title makes clear and the working example show, the Winter cyclic imide is a synergist for other ingredients in the dispersions, such as the nonionic dispersants, but there is no suggestion that the imide itself has any dispersant activity on its own. Applicants have stated on numerous occasions that there is no suggestion of cyclic imide dispersant activity in this reference, and the current Office Action once again fails to point to any relevant disclosure in this reference.

Patil relates to ashless dispersants, i.e., a material for use in a fuel or lubricating oil, and contains no reference to any colorant composition.

As the Federal Circuit has made clear, there must still be a reason to combine references although there is no restriction on the source of that reason. Here, neither reference relates to any type of cyclic dispersant in a non-polar colorant dispersion, and there is no reason to combine Winter and Patil in the first instance, other than to extract isolated material from each and paste them on the template of the instant claims. That, of course, is not permissible.

There is no reason to select one compound which although within the enormous scope of Winter's cyclic imides, is not disclosed therein. The scope of the Winter compounds of Formula I is immense, numbering into the billions, if not more. That scope is apparent from the fact that even before considering branching and cyclic analogs and possible substitutions, R^1 presents 40 different entities, and each of R^2 through R^5 presents 259 possible entities (10 alkyls, 10 alkoxy, at least 3 halogens, 11 OR^6 since R^6 (and R^7) can be 11 possible moieties), 49 NR^6R^7 , 11 $COOR^6$, 49 $CONR^6R^7$, 49 NR^6COR^7 , 49 $SO_2NR^6R^7$, at least 16 SO_2M since M is any cation having a valence of 1-3, NO_2 , CN, and CF_3 . Since R^2 through R^5 can be the same or different, there are 120 possible combinations even before considering the possible identity of the 259 entities. Each of the R^1 groups can be substituted by up to 5 entities and each of the 5 entities is selected from 20 possibilities (6 alkyl groups, 6 alkoxy groups, 5 aryl groups, hydroxy, carboxy and sulfo), thereby raising the number of R^1 possibilities to 140.

The Office Action correctly states that if R^2 , R^4 and R^5 are hydrogen, R^3 is $COOR^6$ and R^6 is hydrogen, the resulting Formula I imide would be "based on" trimellitic acid. The Office Action also correctly points out that a disclosed species can be anticipated no matter how many other species are disclosed. But a genus is not a

disclosure of every unnamed species. *In re Baird*, 29 USPQ2d 1550 (Fed. Cir. 1994); *Corning Glass Works v. Sumitomo Electric U.S.A., Inc.*, 9 USPQ2d 1962, 1970 (Fed Cir. 1989). The species noted in the first sentence of this paragraph is not disclosed in Winter, as both the lack of either identifying a passage in the reference or an anticipation rejection further attests. Nothing in Winter suggests these selections be simultaneously made. The fact that 1 out of more than a billion possibilities may “based on” trimellitic acid merely means that, at best, Formula I is sufficiently broad (i.e., generic) as to encompass trimellitic acid imides in addition to billions of other possibilities.

Note further that Winter actually teaches away from this hindsight generated species. Guidance about what selections should preferably be made is provided at column 2, lines 37-42, and provides R³ can only be COOMe and cannot be COOH. The statement on Office Action page 9 that there is no proviso in Winter so limiting R³ is literally correct due to the use of the word “proviso” but it is also true that Winter states R³ preferably should not be COOH, as it would have to be in trimellitic based compounds.

Turning attention to the other moiety in Winter’s reaction product of a cyclic anhydride with a fatty amine, the Office Action acknowledges that no reaction product containing polyisobutylene amine (PIB) is disclosed although PIB is “encompassed”. The Office Action also acknowledges on page 9 that R¹ can also be virtually any other unsaturated or saturated hydrocarbon. The Office Action does not propose any reason to select polyisobutylene as opposed to any of these other hydrocarbons.

An obviousness rejection based on making many selections requires a reason to make all of the required choices simultaneously. No such reason is proposed in this rejection. As a result, what is present here is a series of hindsight selections made to shoehorn Winter's disclosure into the claims under consideration, none of which fairly reflects what would be understood by a person skilled in the art.

[A]n invention would not have been obvious to try when the inventor would have had to try all possibilities in a field unreduced by direction of the prior art. When "what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful" an invention would not have been obvious. *O'Farrell*, 853 F.2d at 903. This is another way to express the KSR prong requiring the field of search to be among a "finite number of identified" solutions. 550 U.S. at 421; see also *Procter & Gamble*, 566 F.3d at 996; *Kubin*, 561 F.3d at 1359. It is also consistent with our interpretation that KSR requires the number of options to be "small or easily traversed. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008)."

Bayer Schering Pharma AG v. Barr Laboratories Inc., 91 USPQ2d 1569, 1572-73 (Fed. Cir. 2009). Accord, *PharmaStem Therapeutics v. ViaCell Inc.*, 83 USPQ2d 1289, 1305 (Fed. Cir. 2007).

Winter presents a disclosure which requires the skilled person to have to try all of the possibilities in a field which is either unreduced by direction of the prior art or one reduced so as to exclude the instant compound as a result of following Winter's stated preferences and thereby excluding tricarboxylic reactants. Not only would it be necessary to try each of the numerous possible choices, but one must intentionally

ignore the direction actually suggested in Winter. That means the invention would not have been obvious. *Bayer Schering Pharma AG*, *supra*; *PharmaStem Therapeutics*, *supra*; *O'Farrell*, *supra*.

In MPEP 2143(E), the Office points out that an “obvious to try” approach, like that here, can establish obviousness only where there was a finite number of identified, predictable solutions, with a reasonable expectation of success. In Example 1 describing how this is applied, there were only fifty-three (53) possible choices. In *Ex parte A*, 17 USPQ2d 1716 (BPAI 1990), the maximum number of possible combinations was 47, *Id.* at 1718. Review of precedent confirms that this value is what was meant by a “finite” number of possibilities. But that pales in contrast to the number involved here, which is far into the billions. That does not meet the requirement for a finite number of identified, predictable solutions, with a reasonable expectation of success. Accordingly, Winter does not provide a finite number of identified, predictable solutions, with a reasonable expectation of success.

The Federal Circuit has also observed that “a disclosure of millions of compounds does not render a claim to three compounds obvious, particularly when that disclosure indicates a preference leading away from the claimed compounds”, *In re Baird*, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994). If 3 out of a million is not obvious, 1 out of a billion is certainly not obvious. Here, the number of combinations “encompassed” by Winter is huge, numbering far in excess of one billion, if not running into trillions or more, and Winter also indicates a preference leading away from the invention by stating a preference for R³ to be COOMe. There must be some guidance in the reference

(or elsewhere) which would lead one skilled in the art to what is “one in a billion”. But there is none here.

Further, given the fact that the number of combinations and permutations falling within the scope of the Winter disclosure is immense, it constitutes, at the very best, a shotgun disclosure. The Board of Appeals has observed that “the likelihood of producing a composition such as here claimed from a disclosure such as shown by the ...patent [disclosing a very great number of permutations] would be about the same as the likelihood as discovering the combination of a safe from a mere inspection of the dials thereof.” *Ex parte Garvey*, 41 USPQ 583, 584 (emphasis by the Board), quoted with approval in *In re Luvisi*, 144 USPQ 646 (CCPA 1965). A shotgun disclosure does not guide the skilled person to a specific composition so as to make that composition obvious, *Ex parte Strobel*, 160 USPQ 352 (Bd. App. 1968), *In re Baird*, 29 USPQ at 1552 (3 out of millions of possibilities compounds is not obvious). The rule that the ability to reconstruct a composition without guidance or a reason to make selections is inadequate under Section 103, *Ex parte Levengood*, 28 USPQ2d 1300 (BPAI 1993), applies with even more force when a shotgun disclosure is involved. The Supreme Court decision in *KSR*, the cases decided since that decision and the revision of the MPEP in light of the case law, have not changed this.

It will be appreciated from the foregoing that the Winter patent has many major deficiencies with respect to the claims being rejected. It provides no *prima facie* basis for contending anything claimed in this application is obvious. Not only does the Patil fail to remedy the deficiencies of Winter, it actually reinforces them.

To the extent that Patil discloses any type of dispersant, it is a polyisobutylene succinimide, as the Examiner has pointed out. But succinic acid is a dicarboxylic acid, a consideration which reinforces Winter's stated preference and guidance of using a dicarboxylic derived material. The dispersant of the present invention is derived from a tricarboxylic entity. It is, of course, not proper to ignore any teaching in Patil which does not support the rejection, *In re Hedges*, , 228 USPQ 685, 687 (Fed. Cir. 1986)(quoting "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art" from *In re Wesslau*, 147 USPQ 391, 393 (CCPA 1965)). Here, both Patil and Winter teach away from a material containing a tricarboxylic entity.

Also, while Patil indicates that polyisobutylene succinimide is a dispersant, it does not attribute that activity to the polyisobutylene moiety which is a part of that compound. There is, therefore, no reason to deconstruct Patil's polyisobutylene succinimide and selectively combine one fragment of that compound with something else.

Moreover, there is no valid reason to take anything from Patil and include it in Winter. Winter relates to an aqueous colorant composition while Patil relates to an ashless dispersant in an oleaginous composition. While the Office Action asserts that Patil teaches at column 24, line 45 that the polymer has good dispersant properties in a "wide variety of environment", that sentence is actually limited to lubricating oil or fuels. There is nothing in that or any other portion of the Patil disclosure which teaches,

suggests or even hints that any material disclosed therein can act as a dispersant for a colorant, much less that there is any possibility an isolated polyisobutylene moiety extracted from the polyisobutylene succinimide ashless dispersant might have some value if substituted for a moiety in some different ingredient in a colorant dispersion. There is no reason to attempt to modify anything in Winter by Patil.

The reaction product of the present invention has excellent dispersing properties for a colorant used in non-polar systems, such as for example, oil-based printing inks. Nothing in the art teaches or suggests that such a reaction product may have these properties, and the fact that it does, is entirely unpredictable.

The deficiencies discussed above make it unnecessary to address other assertions made in the rejection.

In view of all of the foregoing, applicant believes the pending application is in condition for allowance.

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